

Remarks

Applicant respectfully traverses the rejection of claims 1, 8-10, 16 and 17 under 35 U.S.C. §103(a) as being unpatentable over Hounsel patent 5,759,663 in view of Wade patent 5,438,813. Wade was cited only for a teaching that it is known in the art to position the cold face of an insulating lining adjacent a furnace wall. Hounsel was cited for allegedly teaching the remaining claim elements.

It is respectfully submitted that the office action misinterprets the construction of Hounsel's insulating lining. Specifically, it incorrectly asserts that "The insulation material (12) includes an embedded member (44) and a protective element (26) at least partially covering the hot face (16) secured thereto by a securing means (40) and a threaded stud, column 6, line 57-62, that cooperate with the embedded member (44)." Hounsel shows in Fig. 1 an insulating block formed from folded insulation and having a mount 40 anchored with a plurality of beams 35 embedded in the insulation so that the mount 40 extends from the cold side. An access tube 44 is inserted to extend through the center of the block and aligns with a hole 48 in the mount 40 (column 6, lines 52-62). The access tube is preferably made of plastic and is removable after the block is attached to a wall (column 4, lines 8-16). A lath 24 is attached to the hot side of the folded insulation 12. The lath 24 has doubled back portions 28 which extend part way between creases of the folded insulation 12. J-pins 34 are inserted through the insulation in a direction parallel to the hot face and the folded back portions 28 to secure the lath 25 to the insulation 12. (column 6, lines 19-30 and Fig. 1) An abrasion resistant hot face layer is applied to the lath 24 (column 5, lines 65-66), while leaving the access tube 44 open.

The Hounsel block is attached to a surface by positioning the mounts 40 on studs 154 which extend from the surface and securing with a nut 156 by passing a tool through the access tube 44 (column 4, lines 17-21). Figs. 3a and 3b show two blocks attached to a surface 152. The tube 44 is removable, and after the block is secured to the surface, the tube 44 is removed from the insulation. Thus, the tube 44 does not

remain embedded in the block and neither the protective element nor any other element is secured to the tube 44. An additional protective layer 26 may then be applied over the to block. It will be seen that once the blocks are attached to the mounting surface, the protective layer 26 cannot be repaired or replaced, since it is secured with the J-pins which are embedded in the insulation and not accessible from the exposed surface. The only way to replace the protective surface is to replace the entire blocks.

Housel does not disclose the basic claimed furnace lining as asserted in the office action. Referring to the claims, claim 1 and the claims dependent thereon require "the protective element being secured relative to the hot face by a securing means which co-operates with a member which is embedded in the insulating material" and that "the securing means is adapted to engage the member after the member is embedded in the insulating material". It is submitted that neither Hounsel nor Wade teach securing the protective element with a securing means of the type claimed. Claim 17 also required that the protective element is secured to the hot face both with the securing means and with an adhesive. Without a teaching in the cited art of the claimed securing means, it is submitted that claims 1, 8-10, 16 and 17 are patentable and that the rejection should be withdrawn.

Applicant respectfully traverses the rejection of claims 2-4, 6, 7, 18 and 19 under 35 U.S.C. §103(a) as being unpatentable over the Hounsel and Wade patents and Ficola European patent document EP 0695923. The Hounsel and Wade patents were applied the same as to claim 1. Ficola was cited for teaching that it is known in the art to use a threaded stud member having a head as a securing means. However, the Ficola stud member does not engage a member which is embedded in the insulating material. In Ficola's Fig. 1 embodiment, the stud member 6 is simply screwed into the insulating material. In the Fig. 2 embodiment, the stud member 3 is secured to a nut 9 which is located behind a plate 2. In the Fig. 3 embodiment, a stud member 10 is screwed to a plate 11 which is located behind the plate 2.

The office action incorrectly states "HOUNSEL discloses a securing means which is a threaded stud, column 6, lines 57-62, that inherently includes a shank and a head." A stud may include, but does not inherently include, a head. However, the securing means referred to in column 6, lines 57-62 is for securing the mounts 40 to a surface, such as the surface 152 shown in Figs. 3a and 3b, to which the stud is secured.

Claims 2-4, 6, and 7 are ultimately dependent on claim 1 and are believed patentable over Hounsel and Wade for the reasons discussed above. Claim 2 further requires that the securing means which co-operates with a member which is embedded in the insulating material is a headed fastener having a shank. Claim 3 is dependent on claim 2 and further requires that the shank is provided with a screw thread and that the embedded member is provided with a complementary thread which is engaged by the shank. Claim 4 is dependent on claim 3 and further requires that the shank passes through a passage through the protective element into co-operation with the embedded member. Claims 6 and 7 are dependent on claim 1 and further specify that the embedded member includes an integral shank or is adapted to have a shank secured thereto and that the securing means is engageable with the shank. Although Ficola shows a headed fastener having a shank, none of these references show the use of a headed fastener engaging a member embedded in the insulating material for securing a protective element to the insulating material. Thus, Ficola does not cure the failures of Hounsel and Wade to teach the claimed invention.

Claim 18 is directed to a furnace lining having an insulating material with a cold face attached to the furnace wall, and a hot face. A protective element is secured to the hot face with a headed fastener having a shank which co-operates with a member embedded in the insulating material. None of the applied references show such a construction. Hounsel secures a lath to the insulation material using J-pins and then applies the protective material to the lath in a manner similar to applying plaster. Hounsel does not use a headed fastener having a shank for securing a protective

element to the hot face of insulation attached to a furnace wall. Wade does not have any protective element. Although Ficola discloses a headed fastener, it does not engage a member embedded in the insulating material for securing a protective element. Accordingly, Claim 18 is not unpatentable.

Claim 19 also is directed to a furnace lining having an insulating material with a cold face attached to the furnace wall, and a hot face. A protective element is secured to the hot face with a securing means which is attached to a shank which is integral with or attached to a member embedded in the insulating material. The shank of the securing means passes through the protective element to engage with the embedded member or the securing means. None of the applied references show such a construction. Hounsel does not use a headed fastener having a shank for securing a protective element to the hot face of insulation attached to a furnace wall. Wade does not have any protective element. Although Ficola discloses a headed fastener, it does not engage a member embedded in the insulating material for securing a protective element. Accordingly, Claim 19 also is not unpatentable.

In view of the above comments, withdrawal of the rejection of claims 2-4, 6, 7, 18 and 19 is requested.

Applicant respectfully traverses the rejection of claims 21, 24-27, 29-32, 35 and 38 under 35 U.S.C. §103(a) as being unpatentable over the Hounsel and Wade patents. The office action incorrectly states:

"In reference to claim 24, the shank (unlabeled) of the threaded strut is inherently inserted through a hole (unlabeled) in the embedded member (44), column 6, lines 57-62. Regarding claim 25, the shank (unlabeled) engages a securing means (40), column 6, lines 57-62. In reference to claim 26, the embedded member (44) is embedded by forcing, column 8, lines 1-3."

The threaded stud, 154 in Fig. 3a, is secured to the surface and is not inserted through the hole in the tube 44. Hounsel states "the mount 40 is designed so that a threaded stud on the surface to be lined can be insert through the hole 48." (column 6, lines 58-

60, emphasis added) Thus, the stud is not inherently inserted through a hole in the tube 44. It is agreed that the stud and nut engage the securing means or mount 40 to a surface. However, this does not secure a protective element to the insulation. The referenced column 8, lines 1-3 does not refer to embedding the tube 44 in the insulation. It is describing embedding the lath 170 of Fig. 5 between layers of the insulation.

Although claim 21 as previously presented is believed clear that the step of securing the protective element takes place after the member is embedded in the insulating material, the claim has been amended to make this sequence even clearer. The construction of the Hounsels insulating block does not permit attachment of the protective element to the insulating material after the block is attached to a wall, since the J-pins 35 which secure the lath must be inserted in the insulating material before the blocks are attached to the wall. Once the blocks are attached to the wall, the J-pins 35 are inaccessible. Wade does not provide any protective element. Accordingly, the method of claim 21 is not unpatentable over the applied references. Claims 24-27, 29 and 30 are ultimately dependent on claim 21 and are believed patentable for the same reason. Claims 24 and 25 further limit how the securing member engages the embedded member. Claims 26, 29 and 30 recite that the embedded member is embedded in the insulating material by forcing the member into the insulating material and then rotating the member so that it cuts or divides the insulating material and is anchored therein. Claim 29 also recites that the member is rotated by using a shank on the embedded member as a tool. Claim 30 recites that the member is rotated with a tool which is subsequently removed from the insulating material. Claim 27 is dependent on claim 21 and recited that there are a plurality of blocks or modules covering a substantial part of the furnace wall, and a plurality of protective elements secured to the hot face on the insulating material of at least one module by means including a securing means which co-operates with a member which is embedded in

the insulating material. Since the above claim elements are not shown in either Hounsel or Wade, the rejection should be withdrawn.

Claim 35 is directed to a method of improving the thermal resistance of an existing furnace lining having an insulating material attached to an inside wall of the furnace. The method includes providing a protective element which at least partially covers the hot face and securing the protective element to the hot face by a securing means which co-operates with a member which is embedded in the insulating material. As previously noted, the construction of the Hounsel insulating block requires attachment of the protective layer to the insulating material prior to attaching the insulating block to a wall surface. Once a furnace wall or other surface is lined with the Hounsel blocks, it is not possible to insert the J-pins to attach a protective element. Further, Wade does not have a protective element. Accordingly, claim 35 also is patentable.

Claim 38 is believed patentable for the reasons discussed above for claim 1 on which it depends.

Applicants respectfully traverse the rejection of claims 22 and 23 under 35 U.S.C. §103(a) as being unpatentable over the Hounsel, Wade and Ficola patents. The office action incorrectly asserts that "HOUNSEL, as modified by WADE, details the use of a threaded member for cooperation with an embedded member (44) for securing the protective element (26) to the furnace lining (12)". Hounsel does not teach securing anything to the tube 44, which is a temporary tool which facilitates attaching the insulating block to a wall. Wade does not teach a securing means for a protective element which engages a member embedded in the insulating material. Further, since Hounsel describes the tube 44 as "preferably being made of plastic and removable", it is clear that the protective element is not secured to the tube 44.

Claims 22 and 23 are believed patentable over Hounsel and Wade for the reasons discussed above for claim 21 on which they depend. The claims require a headed fastener which has a shank which co-operates with a member embedded in the

insulating material. Ficola does not cure the failures of Hounsel and Wade to teach the claimed invention, since Ficola does not disclose any member embedded in the insulating material for use in securing its protective element. Accordingly, claims 22 and 23 are patentable and the rejection should be withdrawn.

Applicant respectfully traverses the rejection of claims 8 and 9 U.S.C. §103(a) as being unpatentable over the Hounsel, Wade and Ficola patents. Claims 8 and 9 are patentable over Hounsel and Wade for the reasons discussed above for claim 1 on which they depend. Ficola does not cure the failures of Hounsel and Wade to disclose a furnace lining having a protective element secured to the hot face of an insulating material by a securing means which co-operates with a member embedded in the insulating material. Accordingly, claims 8 and 9 also are patentable over the applied references and the rejection should be withdrawn.

For the reasons discussed above, it is requested that the rejections be withdrawn and that the claims pending in the application be allowed. Early and favorable action is requested.